Claims

[c1] 1. A method of increasing wafer-cleaning efficiency, comprising the steps of:
depositing different types of process particles on a test wafer;
conducting a cleaning operation to remove process particles from the test wafer;
scanning the test wafer to determine the type of process particles completely removed from the test wafer and the type of process particles retained on the test wafer;
producing an assessment of the wafer-cleaning operation according to the results obtained by scanning the test wafer for process particles remaining on the test wafer; and
adjusting the operating parameters of the cleaning operation to boost wafer-cleaning efficiency.

[c2] 2. The method of claim 1, wherein each type of the process particles has a different shape, a different dimension and a different material composition.

[c3] 3. The method of claim 1, wherein the step of depositing process particles onto the test wafer further includes positioning each type of the process particles in a designated location on the test wafer.

[c4] 4. The method of claim 1, wherein the process particles comprises silicon-rich particles, dielectric particles, metallic particles or metallic oxide particles.

[c5] 5. The method of claim 4, wherein the silicon-rich particles include silicon particles or polysilicon particles.

[c6] 6. The method of claim 4, wherein the dielectric particles include silicon dioxide particles or silicon nitride particles.

[c7] 7. The method of claim 4, wherein the metallic particles include aluminum particles, gold particles, silver particles, copper particles, nickel particles, iron particles, titanium particles, tantalum particles or tungsten particles.

[c8] 8. The method of claim 4, wherein the metallic oxide particles include aluminum oxide particles or titanium oxide particles.

[c9] 9. The method of claim 1, wherein average dimension of the process particles is between about 0.01 μ m to 1.0 μ m.

[c10] 10. The method of claim 1, wherein average dimension of the process particles is between about 1.0 μ m to 5.0 μ m.

[c11] 11. The method of claim 1, wherein the test wafer is scanned using a laser scanner.

[c12] 12. A method of increasing process yield, comprising the steps of:
depositing different types of process particles on a test wafer;
scanning the process particles on the test wafer to simulate the types of process particles produced in an actual processing operation;
determining if the process particles have any adverse effect on a subsequently formed device according to the results of the scanning operation; and
increasing the process yield of the actual processing operation by modifying the operating parameters of the actual processing operation if the process particles have some adverse effects on the device.

[c13] 13. The method of claim 12, wherein the each type of the process particles has a different shape, a different dimension and a different material composition.

[c14] 14. The method of claim 12, wherein the step of depositing process particles onto the test wafer further includes positioning each type of the process particles in a designated location on the test wafer.

[c15] 15. The method of claim 12, wherein the process particles comprises silicon-rich particles, dielectric particles, metallic particles or metallic oxide particles.

[c16] 16. The method of claim 15, wherein the silicon-rich particles include silicon particles or polysilicon particles.

[c17] 17. The method of claim 15, wherein the metallic particles include aluminum particles, gold particles, silver particles, copper particles, nickel particles, iron particles, titanium particles, tantalum particles or tungsten particles.

[c18] 18. The method of claim 12, wherein average dimension of the process particles

is between about 0.01 μ m to 1.0 μ m.

[c19] 19. The method of claim 12, wherein average dimension of the process particles is between about 1.0 μ m to 5.0 μ m.

[c20] 20. The method of claim 12, wherein the test wafer is scanned using a laser scanner.